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ABSTRACT

The purposes of this first phase of a proposed two-phase study were (1) to collect necessary baseline data for the completion of the total two-part study, and (2) to note the effects on school achievement of one year's instruction in English given to kindergarten Navaho-speaking monolinguals. The following groups from the Window Rock-Ft. Defiance schools were selected: kindergarten Navaho-speaking monolinguals, kindergarten compound bilinguals (Navaho-English), kindergarten Navaho-speaking monolinguals who received on year's concentrated instruction in English, first-grade Navaho-speaking monolinguals, first-grade English-speaking monolinguals, and first-grade compound bilinguals. Measures of intelligence and achievement were obtained. Analysis of variance and Sheffe's technique were used to test for differences in order to meet the second objective of this project. Aside from getting baseline data and finding expected differences (e.g., English-speaking monolinguals scored higher in achievement than Navaho-speaking monolinguals), the most promising discovery was the positive influence of instruction in English on school performance. In light of this, it is important to determine the long-term effects of early concentrated English instruction in a school setting. (Author/AMM)

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TYPES OF BILINGUALISM AND PERFORMANCE OF NAVAHO CHILDREN IN SCHOOL, PHASE I

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Summary

The purpose of this first phase of a proposed two-phase study was (1) to collect necessary baseline data for the completion of the total two-part study, and (2) to note the effects on school achievement of one year's instruction in English given to kindergarten Navaho-speaking monolinguals.

The following Navaho groups from the Window Rock-Ft. Defiance schools were selected: kindergarten Navaho-speaking monolinguals, kindergarten compound bilinguals (Navaho-English), kindergarten Navaho-speaking monolinguals who received one year's concentrated instruction in English, first-grade Navaho-speaking monolinguals, first-grade English-speaking monolinguals, and first-grade compound bilinguals. Measures of intelligence and achievement were obtained. Analysis of variance and Sheffé's technique were used to test for differences in order to meet the second objective (above) of this project.

Aside from getting baseline data and finding expected differences (e.g., English-speaking monolinguals scored higher in achievement than Navaho-speaking monolinguals), the most promising discovery was the positive influence of instruction in the English language on school performance. In light of this, it is quite important to determine the long-term effects of early concentrated instruction in English within a school setting. The completion of the second part of the total three-year, longitudinal project should provide (1) defensible answers to this question, and (2) information regarding type of bilingualism to foster in a bilingual community.

Problems Under Consideration

Although much attention, effort, and money have been expended on educational programs for bilinguals, little programmatic research has been done to give direction to these programs (reflected in reviews by Cazden, 1968; Dever, 1969; Palmer, 1970; Stafford, 1968). The present study was the first part of a two-phase extension of a previous, more fundamental investigation of the effects of types of bilingualism on problem-solving behavior of

children (USOE Project #2944). In view of the findings from Project #2944, three questions were framed for a three-year project:

1) Will there be differences in performance in school subjects as a function of lingual types (Ervin & Osgood, 1954)?

2) What will be the effects of one year's kindergarten instruction in English on school achievement?

3) Will there be worthwhile lasting effects of preschool English instruction?

For reasons of expediency, the proposal for this project was divided into two phases. Questions one and three can be answered only upon completion of the total two-phase project. Question two was answered in part. There were two essential functions of Phase I of the total proposal. As stated, a partial answer was obtained regarding the effects of pre-training in English. And, secondly, baseline data were collected which are necessary for the completion of the three-year, longitudinal study.

Method

In the pursuit of answers to the three questions of the total proposal, the following Navaho groups from the Window Rock-Ft. Defiance schools were selected: kindergarten Navaho-speaking monolinguals, kindergarten compound bilinguals (Navaho-English), kindergarten Navaho-speaking monolinguals who received one year's concentrated instruction in English, first-grade Navaho-speaking monolinguals, first-grade English-speaking monolinguals, and first-grade compound bilinguals. No fewer than 28 pupils, male and female, were in any one intact group. From these populations, no coordinate bilinguals were yet available, of course, making this comparison (question one) impossible during Phase I. Lingual types were determined by a questionnaire given to teachers who knew and questioned pupils about their linguistic status.

Measures of intelligence and achievement were obtained. All kindergarten children were given the Columbia Mental

Maturity Test and the Metropolitan Readiness Tests. All first-grade children were given the Metropolitan Achievement Tests, Primary I Battery.

Results

Analysis of variance and Sheffé's technique were used to check for differences. Results are given in Tables 1, 2, 3, 4, 5, and 6.

TABLE 1

Analyses of Variance for Kindergarten Compound and Navaho-Speaking Monolingual Groups by Variables Shown

Variable		SS	df	MS	F	p
IQ	(T)	7932.56	56			
	(G)	5.02	1	5.02		not
	(E)	7927.54	55	144.14	.03	sig.
Word Meaning	(T)	255.51	56			
	(G)	1.62	1	1.62		not
	(E)	253.89	55	4.62	.04	sig.
Listening	(T)	390.32	56			
	(G)	20.67	1	20.67		
	(E)	369.65	55	6.72	3.07	.10*
Matching	(T)	499.53	54			
	(G)	.85	1	.85		not
	(E)	498.68	53	9.41	.09	sig.
Alphabet	(T)	979.71	55			
	(G)	56.36	1	56.36		
	(E)	923.36	54	17.10	3.30	.10*
Numbers	(T)	362.50	55			
	(G)	7.14	1	7.14		not
	(E)	355.36	54	6.58	1.09	sig.
Copying	(T)	531.72	56			
	(G)	.03	1	.03		not
	(E)	531.69	55	9.67	.003	sig.
Total	(T)	728.50	56			
	(G)	90.09	1	90.09		not
	(E)	719.49	55	130.82	.69	sig.

*Compound > Navaho-speaking monolinguals.

TABLE 2

Analyses of Variance for First Grade Compound, Navaho-Speaking Monolinguals, and English-Speaking Monolinguals by Variables Shown

Variable		SS	df	MS	F	p
Word Knowledge	(T)	13921.00	148			
	(G)	2115.90	2	1057.95		
	(E)	11805.10	146	80.86	13.08	.001
Word Discrimination	(T)	12507.90	149			
	(G)	959.91	2	479.95		
	(E)	11548.01	147	78.56	6.12	.005
Reading	(T)	9038.06	145			
	(G)	1630.03	2	815.01		
	(E)	7408.03	143	51.80	15.73	.001
Arithmetic	(T)	7569.17	149			
	(G)	566.87	2	283.44		
	(E)	7002.30	147	47.63	5.95	.005

TABLE 3

Comparisons of First Grade Groups by Variables Shown Using Sheffé's Test

	Comparison	Means	sd	df	F'Value	p
Word Knowledge	Nav. M vs. Eng. M.	34.64 45.02	7.27 10.04	1,146	26.02	.001
	Nav. M. vs. Compound	34.64 41.06	7.27 9.12	1,146	12.53	.001
	Eng. M. vs. Compound	45.02 41.06	10.04 9.12	1,146	4.98	.05
Word Discrimination	Nav. M. vs. Eng. M.	37.64 44.35	6.77 10.07	1,147	11.53	.001
	Nav. M. vs. Compound	37.64 42.73	6.77 9.01	1,147	8.22	.005
	Eng. M. vs. Compound	44.35 42.73	10.07 9.01	1,147	0.87	not sig.
Reading	Nav. M. vs. Eng. M.	33.97 43.19	5.30 8.77	1,143	20.46	.001
	Nav. M. vs. Compound	33.97 39.81	5.30 6.91	1,143	7.84	.01
	Eng. M. vs. Compound	43.19 39.81	8.77 6.91	1,143	5.40	.05
Arithmetic	Nav. M. vs. Eng. M.	40.17 45.33	5.95 5.96	1,147	10.70	.005
	Nav. M. vs. Compound	40.17 41.88	5.95 7.81	1,147	3.66	.10
	Eng. M. vs. Compound	45.33 41.88	5.96 7.81	1,147	3.24	.10

TABLE 4

Analyses of Variance by Variables Shown for Navaho-Speaking Monolinguals Who Received Special Instruction in English (Group 1) and Those Who Did Not (Group 2)

Variable	Means		SS	df	MS	F	p
IQ	(1)	86.64	(T) 2993.71	27			
	(2)	85.93	(G) 3.57	1	3.57	.003	not sig.
			(E) 2990.14				
Word Meaning	(1)	6.00	(T) 112.96	27			
	(2)	5.07	(G) 6.04	1	6.04		not sig.
			(E) 106.93	26	4.11	1.47	
Listening	(1)	8.71	(T) 171.71	27			
	(2)	6.71	(G) 28.00	1	28.00		
			(E) 143.71	26	5.53	5.07	.05
Matching	(1)	8.71	(T) 218.52	26			
	(2)	10.15	(G) 13.97	1	13.97		not sig.
			(E) 204.55	25	8.18	1.71	
Alphabet	(1)	7.71	(T) 372.68	27			
	(2)	6.07	(G) 18.89	1	18.89		not sig.
			(E) 353.79	26	13.61	1.39	
Numbers	(1)	10.50	(T) 130.67	26			
	(2)	7.62	(G) 56.09	1	56.09		
			(E) 74.58	25	2.98	18.80	.001
Copying	(1)	9.79	(T) 252.11	27			
	(2)	9.57	(G) .32	1	.32		not sig.
			(E) 25].79	26	9.68	.003	
Total	(1)	51.43	(T) 2336.11	27			
	(2)	43.93	(G) 393.75	1	393.75		
			(E) 1942.36	26	74.71	5.27	.05
Chronological Age	(1)	70.71	(T) 942.71	27			
	(2)	73.71	(G) 63.00	1	63.00		not sig.
			(E) 879.71	26	33.84	1.86	

TABLE 5

Analyses of Variance by Variables Shown for Kindergarten Navaho-Speaking Monolinguals (Group 1) and Compound Bilinguals (Group 2) Neither of Which Received Special Instruction in English

Variable	Means		SS		df	MS	F	p
IQ	(1)	85.93	(T)	3114.71	27			
	(2)	87.64	(G)	20.57	1	20.57		not sig.
			(E)	3094.14	26	119.01	.17	
Word Meaning	(1)	5.07	(T)	152.68	27			
	(2)	6.14	(G)	8.04	1	8.04		not sig.
			(E)	144.64	26	5.56	1.44	
Listening	(1)	6.71	(T)	158.68	27			
	(2)	9.07	(G)	38.89	1	38.89		
			(E)	119.79	26	4.61	8.44	.01
Matching	(1)	10.15	(T)	275.63	26			
	(2)	9.29	(G)	5.08	1	5.08		not sig.
			(E)	270.55	25	10.82	.47	
Alphabet	(1)	6.07	(T)	516.71	27			
	(2)	10.36	(G)	128.57	1	128.57		
			(E)	388.14	26	14.93	8.61	.01
Numbers	(1)	7.62	(T)	158.07	26			
	(2)	8.71	(G)	8.14	1	8.14		not sig.
			(E)	149.93	25	6.00	1.35	
Copying	(1)	9.57	(T)	225.71	27			
	(2)	9.86	(G)	.57	1	.57		not sig.
			(E)	225.14	26	8.66	.006	
Total	(1)	43.93	(T)	3276.86	27			
	(2)	53.21	(G)	603.57	1	603.57		
			(E)	2673.29	26	102.82	5.87	.025
Chronological Age	(1)	73.71	(T)	668.11	27			
	(2)	69.64	(G)	116.04	1	116.04		
			(E)	552.07	26	21.23	5.46	.05

TABLE 6

Analyses of Variance by Variables Shown for Navaho-Speaking Monolinguals Who Received Special Instruction in English (Group 1) and Compound Bilinguals Who Did Not (Group 2)

Variable	Means		SS		df	MS	F	p
IQ	(1)	86.64	(T)	2677.43	27			
	(2)	87.64	(G)	7.00	1	7.00	.07	not sig.
			(E)	2670.48	26	102.70		
Word Meaning	(1)	6.00	(T)	137.86	27			
	(2)	6.14	(G)	.14	1			not sig.
			(E)	137.71	26	5.30	.02	
Listening	(1)	8.71	(T)	122.68	27			
	(2)	9.07	(G)	.89	1	.89		not sig.
			(E)	121.79	26	4.68	.19	
Matching	(1)	8.71	(T)	314.00	27			
	(2)	9.29	(G)	2.29	1	2.29		not sig.
			(E)	311.71	26	11.99	.19	
Alphabet	(1)	7.71	(T)	208.96	27			
	(2)	10.36	(G)	48.89	1	48.89		
			(E)	360.07	26	13.85	3.53	.10
Numbers	(1)	10.50	(T)	176.68	27			
	(2)	8.71	(G)	22.32	1	22.32		
			(E)	154.36	26	5.94	3.76	.10
Copying	(1)	9.79	(T)	182.11	27			
	(2)	9.86	(G)	.04	1	.04		not sig.
			(E)	182.07	26	7.00	.005	
Total	(1)	51.43	(T)	3416.11	27			
	(2)	53.21	(G)	22.32	1	22.32		not sig.
			(E)	3393.79	26	130.53	.17	
Chronological Age	(1)	70.71	(T)	634.11	27			
	(2)	69.64	(G)	8.04	1	8.04		not sig.
			(E)	627.07	26	24.08	.33	

Conclusions and Recommendations

Aside from getting baseline data and finding expected differences (e.g., English-speaking monolinguals scored higher in achievement than Navaho-speaking monolinguals), the most promising discovery was the positive influence of instruction in the English language on school performance. Kindergarten Navaho-speaking monolingual children who received special instruction in English did significantly better than those who received none in tests of Listening, Number, and Total scores (Table 4). As was expected, kindergarten compound bilinguals scored higher (Listening, Alphabet, and Total scores) than kindergarten Navaho-speaking monolinguals (Table 5). However, the Navaho-speaking monolinguals who received one year's instruction in English were not significantly inferior to the compound bilinguals on total scores. There was even a significant difference in the score on Numbers favoring the originally monolingual group (Table 6). In light of this, it is quite important to determine the long-term effects on school learning of early concentrated English instruction in a school setting.

The completion of Phase II should add enough information to provide defensible answers to all three questions in the original proposal.

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